

Modified PTFE-PANI membranes for the recovery of oil products from aqueous oil emulsions

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Abstract

© 2017, Pleiades Publishing, Ltd. Composite membranes have been prepared by modifying a polytetrafluoroethylene membrane with aniline hydrochloride, and the effect of polymerization time on the efficiency of the recovery of petroleum products from aqueous oil emulsions was studied. It has been found that the modification leads to an increase in the degree of oil removal from oil-in-water emulsions by 29%. The specific productivity of the original and modified membranes has been determined with distilled water and water-oil emulsions. It has been found that the specific productivity of the membranes decreases with the time of membrane treatment with ammonium persulfate. The surface of the modified membranes has been studied with the aid of a scanning electron microscope, and the elemental composition of composite membrane surfaces has been examined by X-ray fluorescence analysis. It has been determined that the modification of a polytetrafluoroethylene membrane with aniline hydrochloride leads to an increase in the carbon content and the appearance of nitrogen, oxygen, and sulfur atoms.

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Keywords

emulsion, membranes, oil products, polyaniline, PTFE

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